

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



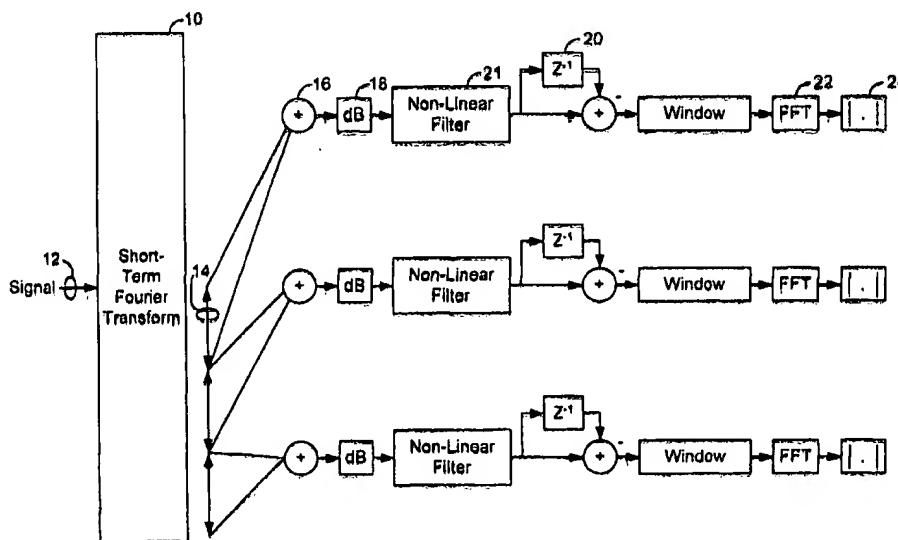
(43) International Publication Date
22 November 2001 (22.11.2001)

PCT

(10) International Publication Number
WO 01/88900 A3

- (51) International Patent Classification⁷: G10H 3/12, 1/00 (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
- (21) International Application Number: PCT/IB01/00982
- (22) International Filing Date: 15 May 2001 (15.05.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
09/570,679 15 May 2000 (15.05.2000) US
- (71) Applicant: CREATIVE TECHNOLOGY LTD.
[SG/SG]: 31 International Business Park, Creative Resource, Singapore 609921 (SG).
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:
— with international search report
- (72) Inventor: LAROCHE, Jean; 131 Chrystal Terrace, Santa Cruz, CA 95060 (US).
- (88) Date of publication of the international search report:
23 May 2002
- (74) Agents: FROST, Alex, John et al.; Boulton Wade Tennant, Verulam Gardens, 70 Gray's Inn Road, London WC1X 8BT (GB).
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PROCESS FOR IDENTIFYING AUDIO CONTENT



(57) Abstract: A fingerprint of an audio signal is generated based on the energy content in frequency subbands. Processing techniques assure a robust identification fingerprint that will be useful for signals altered subsequent to the generation of the fingerprint. The fingerprint is compared to a database to identify the audio signal.

WO 01/88900 A3

INTERNATIONAL SEARCH REPORT

International Application No
PC1/IB 01/00982

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 G10H3/12 G10H1/00		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 G10H		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 210 820 A (KENYON STEPHEN C) 11 May 1993 (1993-05-11) column 4, line 39 - column 5, line 52 column 9, line 3 - column 10, line 40 column 11, line 27 - line 59 column 15, line 26 - line 34; figures 2, 5, 12	1-10
A	PFEIFFER S ET AL: "AUTOMATIC AUDIO CONTENT ANALYSIS" PROCEEDINGS OF ACM MULTIMEDIA 96. BOSTON, NOV. 18 - 22, 1996, NEW YORK, ACM, US, 18 November 1996 (1996-11-18), pages 21-30, XP000734706 ISBN: 0-89791-871-1 page 23, left-hand column, line 8 -right-hand column, line 33	1-10
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.		
<input checked="" type="checkbox"/> Patent family members are listed in annex.		
* Special categories of cited documents : *A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *Z* document member of the same patent family		
Date of the actual completion of the international search 11 December 2001		Date of mailing of the international search report 18/12/2001
Name and mailing address of the ISA European Patent Office, P.B. 6818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl. Fax: (+31-70) 340-3016		Authorized officer Pulluard, R

INTERNATIONAL SEARCH REPORT

International Application No.

PC1/IB 01/00982

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 986 046 A (LUCENT TECHNOLOGIES INC) 15 March 2000 (2000-03-15) paragraph '0006! paragraph '0013! paragraph '0021! - paragraph '0026!; figure 1 ---	1-10
A	US 5 536 902 A (WOLD ERLING ET AL) 16 July 1996 (1996-07-16) column 9, line 46 -column 10, line 37 column 12, line 2 - line 16 column 17, line 49 -column 18, line 17 column 22, line 9 - line 39; figure 2 -----	1-10

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB 01/00982

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5210820	A	11-05-1993	AT 142815 T	15-09-1996
			CA 2041754 A1	03-11-1991
			DE 69122017 D1	17-10-1996
			DE 69122017 T2	10-04-1997
			EP 0480010 A1	15-04-1992
			ES 2091328 T3	01-11-1996
			HK 133697 A	24-10-1997
			JP 5501166 T	04-03-1993
			JP 3130926 B2	31-01-2001
			WO 9117540 A1	14-11-1991
EP 0986046	A	15-03-2000	EP 0986046 A1	15-03-2000
			JP 2000194384 A	14-07-2000
US 5536902	A	16-07-1996	JP 2906970 B2	21-06-1999
			JP 7325583 A	12-12-1995